Abstract Submitted
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Lifetime Measurements in ^{71}Se[1] A.R. HOWE, R.A. KAYE, N.R. BAKER, S.R. ARORA, Ohio Wesleyan University, J.K. BRUCKMAN, Monmouth College, S.L. TABOR, T.A. HINNERS, C.R. HOFFMAN, S. LEE, Florida State University, J. DÖRING, BfS (Germany) — In the light selenium isotopes, ^{71}Se appears to be a transitional nucleus, showing signs of competing single particle and collective structures, but its level structure is not well known. The present work measured lifetimes in ^{71}Se in order to quantify the degree of collectivity as a function of spin as the configuration of the unpaired neutron changes. ^{71}Se nuclei were produced at high spin by a ^{54}Fe(^{23}Na,αpn) fusion reaction at 80 MeV conducted at Florida State University. Fifteen lifetimes were measured from the resulting gamma-ray coincidence data using the Doppler-shift attenuation method. Experimental transition quadrupole moments Q_t were inferred from the lifetimes and found to be in rough agreement with the predictions of cranked Woods-Saxon calculations. Comparisons with neighboring odd-mass nuclei confirmed that ^{71}Se exhibits moderate collectivity. Based on coincidence relations and systematic arguments, the level scheme was enhanced and extended to higher spin. A band that was previously assigned positive parity was reassigned as the "missing" signature partner of an existing negative-parity band.

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